ABSTRACT

Counting is a material that is considered difficult for most elementary school students. The difficulty that many students complain about in learning mathematics is related to understanding logic in the form of algebra, one of which is material about prime numbers. Based on the problems felt by elementary school students, it was decided to provide a means to solve them, namely with games. Currently, the use of games in the field of education is increasingly being used with the aim of increasing understanding of learning materials and making them more enjoyable.

The stages in the design process are problem and requirements analysis, game design, algorithm implementation, and testing. In designing the prime number game, implementing artificial intelligence as opposed to playing in the form of a balloon with prime numbers is the target of shooting. The opponent to play is a non-player character (NPC) which utilises the use of the fuzzy mamdani algorithm to determine the number of balloon appearances based on the input variables of balloon_remaining and time_remaining.

Based on the results of the tests that have been carried out, the results of the application of the Mamdani fuzzy algorithm are considered successful, as evidenced by the number of balloons that are raised according to the defuzzification calculation using the centroid method. The test results show an accuracy performance value of 80%. Meanwhile, based on system functionality testing based on alpha testing, it was stated that it was running according to function and beta testing based on the distributed questionnaire was declared valid and reliable.

Keywords: Education, games, Artificial Intelligence, non-player character (NPC), fuzzy mamdani algorithm.